

REMARKS

In a first Office Action dated July 6, 2007, the Examiner rejected claims 1-14, 16-26, 28-36, 38-40, 45, and 50-52 under 35 U.S.C. §103(a) as being unpatentable over Luschi et al. (U.S. patent application publication no. 2003/0045288, hereinafter referred to as “Luschi”) in view of Kadaba et al. (U.S. patent no. 7,158,504, hereinafter referred to as “Kadaba”). The Examiner rejected claims 15, 27, and 37 under 35 U.S.C. §103(a) as being unpatentable over Luschi in view of Kadaba and further in view of Gopalakrishnan et al. (U.S. patent no. 6,836,666, hereinafter referred to as “Gopalakrishnan”). The Examiner rejected claims 41-44 and 46-49 under 35 U.S.C. §103(a) as being unpatentable over Kadaba in view of Gopalakrishnan. The rejections are traversed and reconsideration is hereby respectfully requested.

35 U.S.C. §103(a) rejection of claims 1-14, 16-26, 28-36, 38-40, 45, and 50-52 as being unpatentable over Luschi in view of Kadaba

The Examiner rejected claims 1-14, 16-26, 28-36, 38-40, 45, and 50-52 under 35 U.S.C. §103(a) as being unpatentable over Luschi in view of Kadaba. Claims 51 and 52 have been canceled.

With respect to claim 1, the Examiner contended that Luschi teaches a method for scheduling mobile station (MS) uplink transmissions by a base station (BS) comprising steps of receiving scheduling information from at least one MS of multiple MSs, wherein the scheduling information comprises at least one of a queue status and a power status of the at least one MS (paragraphs 0015-0016, 0021-0022, 0042, 0047, and 0056-0057), selecting an MS of the multiple MSs and determining an uplink channel scheduling assignment for the selected MS using at least one of the scheduling information and a link quality corresponding to the selected MS (paragraphs 0015-0016, 0021-0022, 0042, 0047, and 0056-0057), and transmitting the uplink channel scheduling assignment to the selected MS, wherein the uplink channel scheduling assignment comprises at least one of a transmission assignment, a maximum power margin target, a maximum power level target and transport format and resource-related information (TFRI) assignment (paragraphs 0045-0046). The Examiner acknowledged that Luschi fails to teach a BS

interference metric but contended that a BS interference metric is taught by Kadaba (col. 1, lines 54-65; col. 3, lines 22-30; col. 7, lines 8-65).

Claim 1 has been amended to provide a method for scheduling mobile station uplink transmissions by a base station that includes receiving scheduling information from at least one MS of multiple MSs, selecting an MS of the multiple MSs and determining an uplink channel scheduling assignment for the selected MS, and transmitting the uplink channel scheduling assignment to the selected MS, wherein the uplink channel scheduling assignment comprises a maximum power margin target. Paragraphs 0045-0046 cited by the Examiner concern downlink shared channel assignment. The only transmitted uplink scheduling assignment information taught by Luschi is a modulation and coding scheme and a channelization code (paragraphs 0047-0051). Nowhere does Luschi teach the feature of claim 1 of transmitting an uplink channel scheduling assignment that comprises a maximum power margin target. Therefore, Luschi does not teach the features of claim 1 and the applicants respectfully request that claim 1 may now be passed to allowance.

Since claims 2-10 depend upon allowable claim 1, the applicants respectfully request that claims 2-10 also may be passed to allowance.

With respect to claim 11, the Examiner contended that Luschi teaches a method for scheduling an MS transmission including scheduling, by a BS of multiple BSs, an MS of multiple MSs for a transmission interval based on scheduling information received from each MS of the multiple MSs and further based on a link quality metric (paragraphs 0015-0016, 0021-0022, 0027, 0042, 0045-0047, and 0054-0057), receiving, by the BS from the scheduled MS, a first transmission of data, which transmission of data is conveyed by the MS during the transmission interval and comprises transport format and resource-related information (TFRI) (paragraphs 0046-0047, 0049-0050).

The Examiner acknowledged that Luschi does not teach the features of claim 11 of decoding the first transmission of the data, when the first transmission of the data is not successfully decoded, receiving, by the BS, communications from the scheduled MS corresponding to at least one retransmission of the data, combining, by the BS, each of

the at least one retransmission of the data with the previously received data to produce combined data until the first to occur of a successful decoding of the combined data or a flushing of a Hybrid Automatic Repeat Request (H-ARQ) buffer, when one of the first transmission of data and the combined data is successfully decoded, conveying an acknowledgment to the MS, and in response to conveying the acknowledgment, flushing the H-ARQ buffer. However, the Examiner contended that these features are taught by Kadaba (col. 12, line 14, to col. 13, line 7). The applicants respectfully disagree and believe that the Examiner has misapplied the cited art to claim 11.

Kadaba does not teach retransmissions in the cited column 12, line 14, to column 13, line 7. Instead, Kadaba merely teaches an uplink transmission of a data burst by an MS to two BSs. One BS unsuccessfully decodes the data burst and sends a NACK back to the MS, while the other BS successfully decodes the data burst and sends an ACK back to the MS. The MS then acts in response to the ACK and sends an instruction to the BS that unsuccessfully decoded the data burst to flush its buffer. Because one BS has successfully decoded the data, the data is not retransmitted.

While Kadaba also teaches a packet format indicator (size, duration, and data rate) that is sent over a separate control channel and is used by a receiving BS to decode a data burst, nowhere does Kadaba teach any buffering of this control signaling at the BS, any combining, by the BS, of retransmitted control signaling with previously received control signaling to produce combined data, or a flushing of a H-ARQ buffer that stores control signaling. The only H-ARQ protected data, and H-ARQ buffering taught by Kadaba, is the data burst. Therefore, neither Luschi nor Kadaba, individually or in combination, teaches the features of claim 11 of, when a first transmission of data comprising TFRI is not successfully decoded, receiving, by the BS, communications from the scheduled MS corresponding to at least one retransmission of the data, combining, by the BS, each of the at least one retransmission of the data with the previously received data to produce combined data, and when one of the first transmission of data and the combined data is successfully decoded, conveying an acknowledgment to the MS and flushing the H-ARQ buffer. Accordingly, the applicants respectfully request that claim 11 may now be passed to allowance.

Since claims 12-28 depend upon allowable claim 1, the applicants respectfully request that claims 12-28 also may be passed to allowance.

Claim 29 has been amended to provide a method for transmitting data by an MS including receiving, at the MS, interference information associated with a BS, determining, by the MS, transport format and resource-related information (TFRI) based on the received interference information, transmitting data in a first reverse link channel, and transmitting the TFRI in a second reverse link channel, wherein the TFRI can be used to demodulate and decode the transmitted data. These features are not taught by Luschi or Kadaba.

Both Luschi and Kadaba teach that the BS determines modulation and coding schemes, transport block set size, frame lengths and channel codes and then provides this to the MS. Kadaba further teaches that if an MS receives multiple packet formats (size, duration, and data rate) from multiple BSs, the MS uses the first received format (from BS1). Nowhere does either Luschi or Kadaba teach the features of claim 29 of transmitting data in a first reverse link channel and a corresponding TFRI in a second reverse link channel, wherein the TFRI is determined by the MS based on interference information received from a BS. Accordingly, the applicants respectfully request that claim 29 may now be passed to allowance.

Since claims 30-40 depend upon allowable claim 29, the applicants respectfully request that claims 30-40 also may be passed to allowance.

Referring now to claim 45, in rejecting claim 45 the Examiner contended that Luschi teaches a method for controlling communications with an MS by a BS including steps of storing, by a BS, traffic data from an MS in a traffic data buffer (paragraphs 0047 and 0056). The Examiner acknowledged that Luschi does not teach transmitting, by the BS, first control data to the MS on a downlink control channel, upon transmitting the first control data, starting, by the BS, a timer, and when a predetermined period of time expires prior to receiving second control data from the MS on an uplink control channel, flushing the traffic data buffer. However, the Examiner contended that these features are

taught by Kadaba (col. 10, line 27, to col. 11, line 13; col. 12, line 14 to col. 13, line 7). The applicants respectfully disagree.

Column 10, line 27, to column 11, line 13, (corresponding to FIG. 7) of Kadaba teaches the functionality of an MS, not a BS. More particularly, this section of Kadaba concerns an MS attempting to schedule a reverse link transmission, not a BS that has already scheduled, and further received, a reverse link transmission. Furthermore, this section of Kadaba teaches that when a timer expires and the MS determines to give up scheduling, the MS transitions to an autonomous (unscheduled) data transmission. Nowhere does Kadaba teach any flushing of a buffer here, let alone a flushing of a buffer, at a BS, comprising received traffic data, in response to an expiration of a timer. The Examiner also cited column 12, line 14 to column 13, line 7, of Kadaba. However, nowhere in this section does Kadaba teach any use of a timer, let alone a taking of an action in response to an expiration of a timer.

Therefore, neither Luschi nor Kadaba, individually or in combination, teaches the features of claim 45 of starting, by the BS, a timer upon transmitting first control data to an MS on a downlink control channel, and when a predetermined period of time expires prior to receiving second control data from the MS on an uplink control channel, flushing the traffic data buffer. Accordingly, the applicants respectfully request that claim 45 may now be passed to allowance.

Referring now to claim 50, in rejecting claim 50 the Examiner contended that Luschi provides a method for controlling communications with a MS by a BS. The Examiner acknowledged that Luschi fails to teach any of the other features of claim 45; however, the Examiner contended that Kadaba teaches transmitting, by the BS, first control data to the MS on a downlink control channel (col. 7, lines 8-61), upon transmitting the first control data, starting, by the BS, a timer, and when a predetermined period of time expires prior to receiving second control data from the MS on an uplink control channel, deallocating, by the BS, demodulation resources allocated to a first uplink control channel associated with the MS while maintaining allocation of demodulation resources associated with a second uplink control channel that is associated

with the MS (col. 10, line 27, to col. 11, line 13; col. 12, line 14 to col. 13, line 7). The applicants respectfully disagree.

As noted above with respect to claim 45, column 12, line 14 to column 13, line 7, of Kadaba teaches nothing concerning a timer and column 10, line 27, to column 11, line 13, of Kadaba merely teaches a timer at an MS, which MS is attempting to schedule a reverse link transmission. As the timer resides at the MS, not the BS, when the timer expires the BS would not deallocate any resources as the timer is not at the BS. Furthermore, the timer expires because the MS has failed to schedule a reverse link transmission. Kadaba makes no mention of allocation and deallocation of demodulation resources to the MS at the BS, and Kadaba cannot be construed to teach, upon expiration of a timer at the BS (again, Kadaba does not teach such a timer), any deallocation of some, but not all, demodulation resources associated with the MS.

Therefore, neither Luschi nor Kadaba, individually or in combination, teaches the features of claim 50 of, upon transmitting first control data, starting, by the BS, a timer, and when a predetermined period of time expires prior to receiving second control data from the MS on an uplink control channel, deallocating, by the BS, demodulation resources allocated to a first uplink control channel associated with the MS while maintaining allocation of demodulation resources associated with a second uplink control channel that is associated with the MS. Accordingly, the applicants respectfully request that claim 50 may now be passed to allowance.

35 U.S.C. §103(a) rejection of claims 41-44 and 46-49 as being unpatentable over Kadaba in view of Gopalakrishnan

The Examiner rejected claims 41-44 and 46-49 under 35 U.S.C. §103(a) as being unpatentable over Kadaba in view of Gopalakrishnan. Specifically with respect to claim 41, the Examiner contended that Kadaba teaches a method for controlling communications with an MS by a BS comprising steps of storing, by the BS, traffic data from the MS in a traffic data buffer (col. 4, line 56, to col. 5, line 17), determining a link quality metric at the BS (col. 5, lines 18-51), and flushing the traffic data buffer (col. 12, line 14, to col. 13, line 7). The Examiner acknowledged that Kadaba does not teach

comparing a link quality metric to a threshold and the link quality metric comparing unfavorably with the threshold; however, the Examiner contended that these features are taught by Gopalakrishnan (col. 4, line 43, to col. 5, line 29; col. 6, lines 24-43). The applicants respectfully disagree with the application of the cited art to claim 41.

As described in detail above, Kadaba merely teaches, in column 12, line 14, to column 13, line 7, a BS flushing its traffic data buffer in response to receipt of an instruction from an MS to do so. The flushing is not based on any environmental conditions observed by the BS at the BS. Gopalakrishnan, on the other hand, teaches a BS measuring a total received signal power, from all MSs serviced by the BS, to determine if the BS has any received signal power margin to schedule an additional MS. This measurement has nothing to do with any flushing of a buffer but instead concerns whether additional MSs may be admitted. In combining Kadaba and Gopalakrishnan, the Examiner has engaged in little more than an improper hindsight analysis based on the applicants' own invention. That is, the Examiner has imputed to the BS in Kadaba an ability to self-determine, without first correctly decoding data, whether to flush a traffic data buffer. Nothing in Kadaba even hints at such functionality in the BS and the applicants contend that the only source for such an idea is the applicants' own application. Therefore, the applicants believe that the Examiner has improperly combined the teachings of Kadaba and Gopalakrishnan and respectfully request that claim 41 may now be passed to allowance.

Since claims 42-44 depend upon allowable claim 41, the applicants respectfully request that claims 42-44 also may be passed to allowance.

In rejecting claim 46, the Examiner contended that Kadaba teaches a method for controlling communications with a MS by a BS comprising steps of determining, by the BS, a link quality metric at the BS (col. 5, lines 18-51) and deallocating, by the BS, demodulation resources allocated to a first uplink control channel associated with the MS while maintaining allocation of demodulation resources associated with a second uplink control channel that is associated with the MS (col. 12, line 14, to col. 13, line 7). The Examiner acknowledged that Kadaba does not teach comparing, by the BS, the link quality metric to a threshold and the link quality metric comparing unfavorably with the

threshold, but contended that this is taught by Gopalakrishnan (col. 4, line 43, to col. 5, line 29; col. 6, lines 24-43). The applicants respectfully disagree.

Nowhere in the cited section of Kadaba does Kadaba teach any deallocation, by the BS, of demodulation resources allocated to a first uplink control channel associated with the MS while maintaining allocation of demodulation resources associated with a second uplink control channel that is associated with the MS. That is, in the cited section, Kadaba teaches two BSs that each conveys a schedule grant to an MS. The MS then broadcasts a data burst to the two BSs using the grant of one of them. Schedule grants are not demodulation resources and Kadaba makes no mention of allocation and deallocation of demodulation resources to the MS at a BS, let alone, at a same BS, a deallocation of one demodulation resource associated with a first uplink control channel and an MS while maintaining an allocation of another demodulation resources associated with a second uplink control channel and the MS. Therefore, the applicants believe that neither Kadaba nor Gopalakrishnan teaches the features of claim 46 and respectfully request that claim 46 may now be passed to allowance.

Since claims 47-49 depend upon allowable claim 46, the applicants respectfully request that claims 47-49 also may be passed to allowance.

As the applicants have overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the applicants contend that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the applicants respectfully solicit allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter. Furthermore, please charge any additional fees (including any extension of time fees), if any are due, or credit overpayment to Deposit Account No. 50-2117.

Respectfully submitted,
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